

What is claimed is:

1. A method for powering an implantable medical device with an electrochemical cell, the cell comprising an alkali metal anode coupled to a cathode of a cathode active material activated with an electrolyte, comprising the steps of:

- a) connecting a negative terminal and a positive terminal of the cell to the implantable medical device;
- b) powering the implantable medical device with the cell;
- c) monitoring the depth-of-discharge (DOD) of the cell; and
- d) upon the cell reaching at least about 15% DOD, discharging the cell to deliver capacity equivalent to about 0.2% DOD to about 10% DOD through the application of at least two current pulses separated by a rest period of about one-half to about five seconds.

2. A method for powering an implantable medical device with an electrochemical cell, the cell comprising an alkali metal anode coupled to a cathode of a cathode active material activated with an electrolyte, comprising the steps of:

- a) connecting a negative terminal and a positive terminal of the cell to the implantable medical device;
- b) powering the implantable medical device with the cell;
- c) monitoring the depth-of-discharge (DOD) of the cell;
- d) upon the cell reaching about 15% to about 30% DOD, causing the cell to deliver a first current pulse discharge of significantly greater amplitude than that of a pre-pulse

current immediately prior to the first current pulse discharge;

- e) waiting about one-half to about five seconds; and
- f) discharging the cell to deliver a second current pulse discharge of significantly greater amplitude than that of a pre-pulse current immediately prior to the second current pulse discharge, wherein the first and second current pulse discharges remove cumulative capacity equivalent to about 0.2% DOD to about 10% DOD from the cell.

3. The method of claim 2 including discharging the cell to deliver the first current pulse discharge and the second current pulse discharge to the implantable medical device or to a secondary load.

4. The method of claim 2 including discharging the cell to deliver about 20 mA/cm² to about 1 amp/cm² as the first current pulse discharge and second current pulse discharge.

5. The method of claim 2 including providing the cell of a lithium/silver vanadium oxide couple.

6. A method for providing electrical energy from an electrochemical cell comprising an alkali metal anode coupled to a cathode of a cathode active material activated with an electrolyte, comprising the steps of:

- a) connecting a negative terminal and a positive terminal of the cell to a load;
- b) powering the load with the cell;
- c) upon the cell reaching about 15% depth-of-discharge (DOD) to about 30% DOD, discharging the cell to deliver a first current pulse discharge of significantly

greater amplitude than that of a pre-pulse current immediately prior to the first current pulse discharge;

d) waiting about one-half to about five seconds; and

e) discharging the cell to deliver a second current pulse discharge of significantly greater amplitude than that of a pre-pulse current immediately prior to the second current pulse discharge, wherein the first and second current pulse discharges remove cumulative capacity equivalent to about 0.2% DOD to about 10% DOD from the cell.

7. The method of claim 6 including discharging the cell to deliver the first current pulse discharge and the second current pulse discharge to the load being powered by the cell or to a secondary load.

8. The method of claim 6 including discharging the cell to deliver about 20 mA/cm² to about 1 amp/cm² as the first current pulse discharge and second current pulse discharge.

9. The method of claim 6 including providing the load as an implantable medical device.

10. The method of claim 6 including providing the cathode active material comprising silver vanadium oxide.